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REMEDIATION WORK PLAN
FORMER WESTERN TAR PRODUCTS CORPORATION – PROCESS AREA
2525 PRAIRIETON ROAD
TERRE HAUTE, INDIANA
KERAMIDA PROJECT NO. 3268B
IDEM VRP SITE # 6990902

Submitted to: **INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
Office of Environmental Response
Voluntary Remediation Program
100 North Senate Avenue, Room 1101
Indianapolis, Indiana 46204

Submitted for: **CAVU OPS Inc.**
Mr. Joseph B. Card
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May 13, 2010

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EXECUTIVE SUMMARY

KERAMIDA Inc. (KERAMIDA) was retained by CAVU OPS Inc. (Client) to conduct soil and groundwater closure activities in the Process Area at the Former Western Tar facility (Site) located at 2525 Prairieton Road, Terre Haute, Vigo County, Indiana. The purpose of this 3-media Remediation Work Plan (RWP) is to present closure sampling data and a risk evaluation for soil and groundwater in the Process Area at the Site, which is the area for which a Covenant Not To Sue (CNTS) is being sought through the Indiana Department of Environmental Management's (IDEM) Voluntary Remediation Program (VRP). The Site was admitted to the VRP in 1999 and assigned Site #6990902. This work plan has been prepared in accordance with the guidance of the Indiana Department of Environmental Management (IDEM) Voluntary Remediation Program (VRP) Resource Guide dated July 1996.

The Site has been a wood-treating facility since about 1906. The current owner of the property (VRP Applicant) has sold the plant, but continues to own the property. Stella-Jones Corporation currently leases the property and operates the Site as a wood-treating facility.

Several phases of investigation have been performed at the Site. These include a Phase I assessment by Professional Service Industries, Inc. (PSI), report dated 14 June 1999, a Phase II assessment by PSI, report dated 21 July 1999, and several phases of additional subsurface investigations by Astbury Environmental Engineering, Inc. during the first half of 2000 (no reports prepared).

Geologic site conditions consist of sand, sandy clay loam and sand with gravel to a depth of 117.2 feet below grade. The sand and gravel is underlain by claystone bedrock. Groundwater is present at approximately 40 feet and appears to flow west toward the Wabash River.

Several phases of investigations have revealed the presence of polynuclear aromatic hydrocarbon compounds and volatile organic compounds (PAHs and VOCs, respectively) in surface soils (0-2 feet), subsurface soils (greater than 2 feet), and groundwater. Benzene has been detected in subsurface soil and groundwater at levels exceeding the Indiana VRP Tier II Non-Residential Cleanup Goal. PAHs have been found to exceed the Tier II Non-Residential Cleanup Goals in surface and subsurface soil and in groundwater. Dense non-aqueous phase liquids (DNAPL) is also present within a portion of the Site.

A subsurface investigation was conducted at the Site in the "Process Area." This RWP is being submitted for the Process Area only. This remediation work plan addresses VOCs and PAHs in surface soil, subsurface soil, and groundwater.

The remediation work (RWP), dated May 21, 2007, previously submitted to IDEM and updated through subsequent response letters to IDEM, latest dated May 30, 2008, proposed the excavation of surface soil throughout the Process Area. The VRP defines surface soil as soil extending from zero to two feet below ground surface (bgs). The RWP also proposed the excavation of subsurface soils from two to eight feet bgs from selected "hot spots" within the Process Area. However, exploratory excavation and sampling conducted subsequent to submittal of the RWP indicated that contamination in some areas likely extends beneath on-Site buildings and deeper than eight feet bgs. In a meeting held on August 12, 2003, KERAMIDA proposed to IDEM that a Tier III Site-specific evaluation be performed to determine what remediation will be required to obtain regulatory closure through the VRP. IDEM agreed that a Site-specific Tier III analysis is appropriate for closure of the soils media within the Process Area, which is considered the source area at the Site.

A human health risk assessment (HHRA) was conducted to assess potential health risks from chemicals detected at the Site. More than 300 soil samples have been collected and analyzed from the process area of the Site to support the HHRA and Site closure. The HHRA was conducted in a tiered fashion consisting of (1) a default screening evaluation, (2) a simple non-default evaluation, and (3) a Site-specific evaluation. Based on the results of the default screening-level evaluation, the simple non-default evaluation, and the Site-specific evaluation, the detected concentrations of benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and dibenzo(a,h)anthracene in surface soil may pose risks to potential industrial workers and/or construction/utility workers at the Site. Evaluation of the soil data indicates that where one or more of these Chemicals of Potential Concern (COPCs) occurred above the Tier II pathway-specific cleanup goals, benzo(a)pyrene (BaP) also occurred above its Tier II pathway-specific cleanup goal. BaP also has the lowest cleanup goal of the PAHs of concern for the Site.

Based on these contaminant characteristics, further statistical evaluation was conducted using ProUCL to determine a BaP concentration limit that would ensure the Site-specific exposure concentrations for surface and subsurface soil COPCs would not exceed the pathway-specific cleanup goals. The evaluation was conducted in an iterative fashion, assuming remediation would occur in those sample locations with the highest BaP concentrations. The results of the evaluation indicate that remediation of surface soil at locations with BaP concentrations above

30 milligrams per kilogram (mg/kg) would result in Site-specific exposure concentrations for all COPCs below their respective Tier II Non-Residential pathway-specific cleanup goals.

In order to prevent exposure to COPC concentrations in surface soil, subsurface soil, and groundwater above the Tier II Non-Residential Cleanup Goals, a combination of remedial approaches and institutional controls are proposed:

1. Removal of 2 feet of soil and filling of the void with clean fill,
2. Demonstration that the dense non-aqueous phase liquids (DNAPL) and groundwater plumes are stable or decreasing through plume stability monitoring, and
3. Implementation of an environmental restrictive covenant (ERC) to maintain non-residential use of the Site and adjacent off-Site area to the west-northwest where the groundwater plume exceeds Tier II Residential Cleanup Goals. An ERC will also be used to prohibit use of the groundwater for potable supply and to manage future subsurface excavation in the Process Area at the Site.

The list of COPCs, media, and cleanup goals to be included in the CNTS are summarized in Table 1.

1.0 INTRODUCTION

KERAMIDA Inc. (KERAMIDA) was retained by CAVU OPS Inc. (Client) to remediate soil and groundwater at the former Western Tar facility (Site), Terre Haute, Vigo County, Indiana (Figure 1). The purpose of this 3-media Remediation Work Plan (RWP) is to present closure sampling data and a risk evaluation for soil and groundwater in the Process Area at the Site, which is the area for which a Covenant Not To Sue (CNTS) is being sought through the Indiana Department of Environmental Management's (IDEM) Voluntary Remediation Program (VRP). A Site Plan depicting the entire facility and surrounding property use is provided as Figure 2. A Site Plan depicting the Process Area (area for which the CNTS is requested) is provided as Figure 3. This report presents the findings of investigations and completed remedial activities as well as a plan to address remaining soil and groundwater impacts requiring remediation.

1.1 SITE BACKGROUND

The Process Area at the Site was admitted to the IDEM VRP in 1999 and assigned site #6990902. The chemicals of concern included in the VRP project for surface soil, subsurface soil, and groundwater are volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs). The 1996 VRP guidance defines surface soil as that extending from zero to two feet below ground surface (bgs) and subsurface soil as that greater than two feet bgs. An initial RWP for soil was submitted to IDEM on February 7, 2002, and proposed the excavation of surface soil throughout the Process Area. The RWP also proposed excavation of subsurface soils from two to eight feet bgs from selected hot spots within the Process Area. However, exploratory excavation and sampling conducted subsequent to submission of the initial RWP indicated that contamination in some areas likely extends deeper than eight feet bgs.

In a meeting held with IDEM on August 12, 2003, KERAMIDA proposed a Tier III Site-specific evaluation of soils to determine what remediation might be required to obtain regulatory closure through the VRP. IDEM agreed that a Site-specific Tier III analysis was appropriate for closure of the soils medium. KERAMIDA prepared a Preliminary Risk Evaluation for Soils and submitted it to IDEM in November 2003. Ultimately it was determined that remediation would be required to mitigate exposure to surface soils.

Most recently in 2009 and 2010, additional subsurface soil sampling and monitoring well installations were conducted to further delineate soil and groundwater impacts. This work was performed in response to IDEM's October 21, 2008 comment letter that requested a plan "... that addresses the full extent of contamination in all impacted media stemming from the source (surface soil) at the Site...". The finding of this work is presented in subsequent sections of this RWP.

1.1.1 SITE LOCATION AND HISTORY

The former Western Tar Corporation facility is located at 2525 Prairieton Road, Terre Haute, Vigo County, Indiana (Figures 1, 2, and 3). The entire Site consists of approximately 22 acres located in the southeast quarter of the east half of Section 32 of Range 9 West, Township 12 North. The Process Area is the subject of VRP closure and is approximately three acres in size.

The Site has been a wood-treating facility since about 1906. The primary focus of the Site operation includes the production of pressure-treated railroad ties. Western Tar Products Corporation, a predecessor in interest to CAVU OPS Inc. owned and operated the Site between about 1906 and 2000. In 2000, Railworks Wood Products purchased the operation, but not the Site property. Railworks Wood Products was subsequently acquired by Tangent Rail Corporation. On April 1, 2010, Tangent Rail Corporation was acquired by Stella-Jones Corporation. CAVU OPS Inc. currently owns the property. Stella-Jones Corporation currently leases the property and operates the Site as a wood-treating facility.

1.1.2 SITE DOCUMENTATION

Professional Service Industries, Inc. (PSI) completed a Phase I Environmental Site Assessment, report dated June 14, 1999, of the Site for Western Tar Products Corporation. At the time, the Process Area was part of a larger property. The property was divided in the summer of 2000 by establishing a new north-south property line.

PSI performed a Phase II Environmental Site Assessment, report dated 21 July 1999, of the Process Area. Selected samples were analyzed for PAH, VOC, and priority pollutant metals. PAH were detected at levels exceeding the VRP Tier II Non-Residential Cleanup Goals. No VOCs or metals exceeded the VRP Tier II Non-Residential Cleanup Goals.

Astbury Environmental Engineering, Inc. (AEE) performed additional site investigation activities from late 1999 into the summer of 2000, including surface and subsurface soil sampling and groundwater sampling; however, no reports were generated.

KERAMIDA submitted the initial Remediation Work Plan, dated February 7, 2002, addressing PAHs in surface and subsurface soils. The selected remedial method for achieving the Tier II closure goals in surface and subsurface soils in the Process Area consisted of excavation and off-Site disposal of the impacted soils followed by replacement with clean soil. PAHs remaining in soils above the Tier II closure goals at depths below what was physically feasible for excavation were to be addressed under a risk-based assessment scenario.

The initial RWP, dated February 7, 2002, proposed the excavation of surface soil throughout the Process Area and subsurface soils from two to eight feet bgs from selected "hot spots" within the Process Area. Exploratory excavation and sampling conducted subsequent to submittal of the initial RWP, however, indicated that contamination in some areas likely extends beneath on-Site buildings and deeper than eight feet bgs. In a meeting held on August 12, 2003, KERAMIDA proposed to IDEM that a Tier III Site-specific evaluation be performed to determine what remediation will be required to obtain regulatory closure through the VRP. IDEM agreed that a Site-specific Tier III analysis was appropriate for closure of the soils media within the Process Area.

KERAMIDA prepared a Preliminary Risk Evaluation for soils, dated November 26, 2003. The results indicated the Tier III Site-specific exposure concentrations for soil contaminants using the available soil data were below the Tier II (default) Non-Residential Cleanup Goals. Therefore, remediation of surface and subsurface soils was not required to prevent health risks to potential non-residential receptors from exposure to compounds detected in Site soils. A SAP was included in the report for collection of closure samples to support this conclusion, based on the Process Area being the source area. KERAMIDA submitted a Soil Remediation Completion Report, dated March 2, 2005, documenting closure sampling and a final risk evaluation for soils in the Process Area. COPCs included in the VRP project were VOCs and PAHs.

KERAMIDA submitted two revised Remediation Work Plans since February 2002, reports dated January 27, 2006 and May 21, 2007, to address soils in the Process Area at the Site. The May 21, 2007 RWP provided closure sampling data and the risk evaluation conducted for soils in the Process Area. The May 21, 2007 RWP addressed PAHs in surface soils only.

KERAMIDA conducted additional investigation activities in 2009 and 2010 in response to IDEM's October 21, 2008 comment letter that requested a plan "... that addresses the full extent of contamination in all impacted media stemming from the source (surface soil) at the site ...".

Separate reports of the findings were not submitted to IDEM. The methods and findings of the additional investigation activities are documented in this RWP.

1.2 SUMMARY OF SITE INVESTIGATION ACTIVITIES

1.2.1 PSI PHASE II SITE ASSESSMENT

In June 1999, PSI advanced 11 soil borings to depths ranging from 2 to 20 feet bgs to assess subsurface conditions. Selected samples were analyzed for PAHs, VOCs, and priority pollutant metals. PAHs were detected at levels exceeding the VRP Tier II Non-Residential Cleanup Goals in three borings (B-2, B-4 and B-11). No VOCs or metals exceeded the VRP Tier II Non-Residential Cleanup Goals. KERAMIDA has compiled the complete results for PAHs and VOCs from the PSI, Astbury Environmental Engineering (AEE) and KERAMIDA investigations. They are presented in Tables 2 through 5 of this RWP.

1.2.2 ADDITIONAL ASSESSMENTS BY AEE

Beginning in late 1999 through summer 2000, AEE performed several additional assessments at the Site. However, no AEE reports were prepared. KERAMIDA has reviewed and compiled the data that was collected during the AEE investigations and presented it in the Tables and Figures of this RWP.

1.2.3 INITIAL SOILS REMEDIATION

Initial remediation activities were completed in April 2003. The area selected for remediation was located between the "Welding Shop" and "A and B Mill" on the west side of the Process Building known as the DMS Building. The purpose of the remediation was to excavate and dispose of the surface and subsurface soils that were determined contaminated through field observations and laboratory analytical data. The excavated soils were replaced with clean soil and fill material from off-Site. Excavation and removal of these soils proceeded as deep as was physically feasible based on visual observations of discolored soils and/or results indicated by the use of field instruments capable of detecting organic vapors. The initial excavation was conducted as a "test dig" for the overall remediation project. The objective of the initial excavation was to optimize the remediation process by:

- Evaluating the utility of industry standard tools of field observations (Flame Ionization Detector [FID], visual, and olfactory) to determine the extent of contamination and determine if the known impacted areas could be strategically defined;

- Providing information for a cost-benefit analysis of stockpiling and sampling impacted materials prior to disposal versus live-loading materials for disposal; and
- Determining the extent of contamination beneath buildings.

Field Activities

KERAMIDA performed the remediation field oversight and confirmation sampling activities during the period of April 7-16, 2003. The excavated material was stockpiled on plastic sheeting in the northwest portion of the Site. The soils were excavated to a minimum depth of 2 feet bgs. Impacted soils that were encountered below 2 feet bgs were excavated to a maximum depth of 22 feet bgs.

During excavation activities a wooden tank vault structure was found in the western portion of Excavation 1. The wooden tank structure was assumed to be a historical oil/water separator. Prior to removal activities, the tank vault contained visually impacted soil. It was determined that the western edge of the tank vault was located underneath an abandoned railroad spur. Three borings, KB-1 through KB-3, were advanced west of the railroad spur in order to determine the extent of impacted soils found within and around the wooden tank vault.

The tank vault was excavated and disposed along with the surrounding impacted soils. While excavation of the tank vault occurred, the soil surrounding the tank vault was investigated and screened with an FID. The tank vault had apparently not leaked along the sidewalls of the excavation based on the lack of staining and FID response. Impact was evident beneath the tank vault and still present at 22 feet bgs. Due to safety concerns and the presence of existing structures, the removal activities were terminated.

A steel pipe leading from the welding shop to the wooden tank vault was encountered during excavation. The pipe was cut short of the welding shop in the excavation, capped with concrete, removed, and disposed. During removal of the wooden tank structure, two 14-inch discharge clay pipes were discovered on the northeast end of the excavation. The pipes appeared to be clogged with debris and the inlet location of the pipes is undetermined. The two pipes were capped in place with concrete.

Soils suspected to be contaminated, through field screening activities, were stockpiled and sampled for laboratory analytical confirmation. Approximately 610 tons of impacted soils were subsequently disposed of off-Site at Victory Landfill, Terre Haute, Indiana. During the course of the remediation activities approximately 25 gallons of waste/groundwater were removed from

the tank vault excavation. This wastewater was pumped into a 55-gallon drum and disposed of off-Site by Liquid Waste Removal (LWR), a licensed waste disposal company located in Greenwood, Indiana.

Confirmation sampling of the excavations was performed for VOCs and PAHs. The results indicated the presence of several VOCs in both surface and subsurface samples. All of the VOC results were well below the VRP Tier II Non-Residential Cleanup Goals. Several PAHs were detected in both surface and subsurface soils in excess of the VRP Tier II Non-Residential Cleanup Goals. Benzo(b)fluoranthene exceeded the Tier II Non-Residential Cleanup Goal for surface soil in one sample. Benzo(a)pyrene (BaP) exceeded the Tier II Non-Residential Cleanup Goal for surface soil in four samples. Phenanthrene exceeded the Tier II Non-Residential Cleanup Goal for subsurface soil in one sample. The analytical results are presented in Tables 2 through 5.

1.2.4 2004 ADDITIONAL ASSESSMENT

KERAMIDA completed an investigation of the Process Area in 2004 to obtain additional information for a risk evaluation presented in 2003. A report of the results was not submitted to IDEM. The results were presented in a Remediation Work Plan dated January 27, 2006 where the additional data was used as part of a detailed human health risk assessment of the soil in the process area. The work was completed in November and December of 2004 and is described below. Over 300 soil samples had been collected and analyzed for the Site through 2004.

Sample Locations

A confirmation SAP was developed for surface and subsurface soil based on guidance presented in Appendix D of the IDEM VRP Resource Guide, dated July 1996. A 100 feet by 100 feet grid was superimposed on the Site as shown on Figure 4. A total of 35 grid quadrants were distributed over the Site. Each grid quadrant was then subdivided into 10 foot by 10 foot grid squares, which resulted in 100 grid node intersections per quadrant. A minimum of one grid node was sampled from each quadrant. Previous sampling data were used for up to three of the four data points per quadrant. Extensive excavation, sampling, and analysis were previously completed in the two quadrants near and immediately south of the welding shop. Therefore, no additional samples were collected from those quadrants. Figure 4 shows the grid nodes that were sampled in each quadrant, as well as the previous sample locations from which data were available.

Sample Collection Methods

At each selected grid node, one surface soil sample was collected from the zero- to two-foot interval, and one subsurface soil sample was collected from the 2 to 16-foot interval. Soil samples were selected for laboratory analysis based on evidence of coal tar impacts, such as olfactory/visual impacts or high organic vapor readings. If no evidence of coal tar impact was observed then the interval that had the highest organic vapor reading was collected for laboratory analysis.

A total of 96 soil borings and 12 shallow hand shovel holes were advanced at the Site during the period of October 26, 2004 through November 11, 2004. The borings were completed using a Bobcat-mounted Geoprobe® drill rig. The soil borings were completed under the direct supervision of Mr. Steve Cobb, Project Scientist with KERAMIDA, following KERAMIDA Standard Operating Procedures (SOPs), Attachment 1. A continuous soil core was extracted at four-foot intervals, logged for soil type and visual indication of contamination, and field screened for organic vapors with an FID.

Prior to the collection of each hand shovel sample, the shovel was decontaminated using a distilled water and Alconox® solution. The hand shovel soil samples were also screened using an FID. The samples were placed in the sample jars using hands gloved with disposable nitrile gloves. New gloves were used for each sample. Soil samples were collected following KERAMIDA's SOPs. Soil boring and hand shovel locations are depicted on the Sampling Grid and Soil Boring Location Map provided as Figure 4.

Analytical Methods and QA/QC

Soil samples were submitted through proper chain-of-custody procedures to Heritage Environmental Services, LLC Commercial Laboratory (Heritage), Indianapolis, Indiana, for analysis of VOCs by EPA Method 8260B and PAHs by EPA Method 8270C.

Additional soil samples were collected for laboratory quality assurance and quality control (QA/QC). One duplicate sample was collected for every ten soil samples submitted for laboratory analysis, and one matrix spike and matrix spike duplicate (MS/MSD) was submitted for every twenty soil samples submitted for laboratory analysis. Closure level data reporting and protocol were followed by the laboratory.

Soil Sampling Analytical Results

The analytical results for surface and subsurface soil samples collected in 2004 are included in Tables 2 through 5. All soil analytical results are based on dry weight. The Tier II Non-Residential Cleanup Goals for surface and subsurface soils for each compound are included in the analytical results summary tables. The VOC and PAH analytical results for surface soil are summarized in Tables 2 and 3, respectively, and depicted on Figure 5. The VOC and PAH analytical results for subsurface soil are summarized in Tables 4 and 5, respectively, and depicted on Figure 6. The laboratory analytical reports are provided in Attachment 2.

1.2.5 2009 ADDITIONAL ASSESSMENT

KERAMIDA conducted additional soil and groundwater sampling in 2009 in response to IDEM's October 21, 2008 comment letter that requested a plan "... that addresses the full extent of contamination in all impacted media stemming from the source (surface soil) at the site..." The work consisted of the advancement of 14 soil borings (BB-1 through BB-14). Twelve new monitoring wells (MW-15 through MW-26) were installed in the same borings. Subsurface soil samples were collected from each of the borings and groundwater samples were collected from all existing and new monitoring wells. A separate report of the findings was not submitted to IDEM. The methods and findings are documented in this RWP.

Sample Locations

Soil borings BB-4 and BB-7 were advanced in the vicinity of monitoring wells MW-3 and MW-13 for the purpose of delineating dense non-aqueous phase liquids (DNAPL) previously detected in these wells. The remaining borings and associated new monitoring wells were installed around the perimeter of the contaminated area to further delineate the groundwater plume. The soil boring and monitoring well locations are depicted on Figure 4.

Sample Collection Methods

Field activities were conducted during the periods of April 7-9, 2009 and September 2-4, 2009. The soil borings were advanced with a Geoprobe® rig to collect continuous soil core and to collect soil samples for laboratory analysis. Two subsurface soil samples were collected from each boring; one from the most impacted interval determined by field screening and a second just above the water table. The soil borings were completed under the direct supervision of Mr. Brian Winter, Project Geologist with KERAMIDA, following KERAMIDA SOPs, Attachment 1.

Following completion of the soil borings, monitoring wells were installed with a hollow-stem auger drill rig and developed in accordance with KERAMIDA SOPs. The wells were constructed of two-inch diameter schedule 40 PVC and 0.010-slotted PVC screen. Soil boring logs and well construction diagrams are provided in Attachment 3.

Analytical Methods and QA/QC

Soil and groundwater samples were submitted through proper chain-of-custody procedures to Heritage for analysis of VOCs by EPA Method 8260B and PAHs by EPA Method 8270C (soil) or 8270C SIM (water).

Additional soil samples were collected for laboratory QA/QC. One duplicate sample was collected for every ten soil samples submitted for laboratory analysis, and one MS/MSD was submitted for every twenty soil samples submitted for laboratory analysis. Closure level data reporting and protocol were followed by the laboratory.

Analytical Results

The soil and groundwater analytical results along with historical analytical results from the Site are included in Tables 2 through 7. All soil analytical results are based on dry weight. The Tier II Non-Residential Cleanup Goals for each compound are included in the analytical results summary tables. The VOC and PAH analytical results for surface soil are summarized in Tables 2 and 3, respectively, and depicted on Figure 5. The VOC and PAH analytical results for subsurface soil are summarized in Tables 4 and 5, respectively, and depicted on Figure 6. The VOC and PAH analytical results for groundwater are summarized in Tables 6 and 7, respectively, and depicted on Figure 7. The laboratory analytical reports are provided in Attachment 2.

1.2.6 2010 ADDITIONAL ASSESSMENT

KERAMIDA conducted additional investigation activities in the Process Area at the Site during February-March 2010. The purpose of the additional investigation activities was to collect supplemental data in order to finalize the RWP to address COPC related to coal tar in surface soil, subsurface soil, and groundwater in the Process Area. The additional investigation activities included characterizing the nature and properties of non-aqueous phase liquid (NAPL) identified in the Process Area, vertically delineating the NAPL occurrence, vertically characterizing the stratigraphy in the Process Area to a confining layer or bedrock, and determining relevant geologic and hydrogeologic properties of the sand and gravel outwash

aquifer. The methods and findings of the additional investigation activities are documented in this RWP.

KERAMIDA completed a continuously sampled boring, Strat-1, to bedrock in the Process Area to characterize the stratigraphy and assist with vertically delineation of NAPL occurrence. A soil sample was collected from Strat-1 just above the bedrock surface for analysis of VOCs and PAHs. Groundwater samples were collected from a second boring advanced near Strat-1, designated AP-1, for vertical profiling of VOC and PAH impacts in groundwater. Soil samples were also collected from Stat-1 and a third boring advanced near Strat-1, designated Strat-2, for grain size analysis and permeability testing. KERAMIDA completed four additional borings, BG-1 through BG-4, off-Site in an up-gradient direction and collected representative soil samples to determine the fractional organic content of contaminant-free, vadose soils.

In addition to the soil boring activities, KERAMIDA collected a sample of the DNAPL present in MW-13 to characterize its nature and properties. KERAMIDA completed hydraulic conductivity testing of the sand and gravel outwash aquifer present at the Site. Testing was competed in MW-1, MW-21, MW-24, and MW-26. KERAMIDA subcontractor, Freund Surveying Services, a professional surveyor, surveyed the entire monitoring well network.

Sample Locations

The profile boring to bedrock was designated Strat-1 and was installed 40 feet west (downgradient) of MW-13. Strat-2 was completed 20 feet west of Strat-1 for the collection of 3-inch Shelby Tubes or 3-inch, plastic-lined, split spoons for soil permeability and grain size testing. The aquifer profile boring, designated AP-1, was completed 15 feet north of Strat-2. Soil boring locations are depicted on Figure 4.

Sample Collection Methods

KERAMIDA advanced a total of 7 soil borings at on-Site and off-Site locations during the period of February 15-18, 2010. The soil borings were completed under the direct supervision of Mr. Bruce Winningham, a Licensed Professional Geologist with KERAMIDA, following KERAMIDA SOPs, Attachment 1. Soil and groundwater samples were collected following KERAMIDA's SOPs. Soil boring locations are depicted on Figure 4.

KERAMIDA subcontractor, Earth Exploration, Inc. (EEI), Indianapolis, Indiana, completed borings Strat-1 and Strat-2 using 3¼-inch ID hollow stem augers driven by a conventional rotary drill rig. Strat-1 was continuously sampled from the ground surface to bedrock by driving a 2-